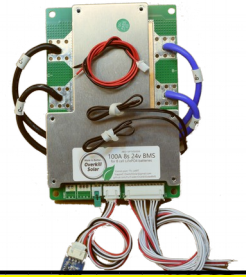




Detailed assembly instructions for a 24v, 8 cell LiFePO4 battery using cells and BMS from Overkill Solar



Step 0: If you don't respect the amount of energy in these batteries, Please Stop Now.

This is dangerous!

Pay attention at each step. Keep metal tools away from the exposed terminals. Bridging terminals with tools or misplaced bus bars can cause fire and/or explosions!



Step 1: Arrange the cells.

Lay out your cells in the correct orientation. For this build each cell is rotated opposite of its neighbor. This allows a series connection of all 8 cells using bus bars. I have labeled each cell, and colored the terminals red and black. The top of the studs are also stamped + and -.

Terminal BC0 is the most negative terminal of the battery. BC8 is the most positive terminal. Cell 1 has terminal BC0, and cell 8 has terminal BC8. This labeling also matches the cell numbers in the iOS and android apps.

Cell 8 ↓

Cell 1 ↓

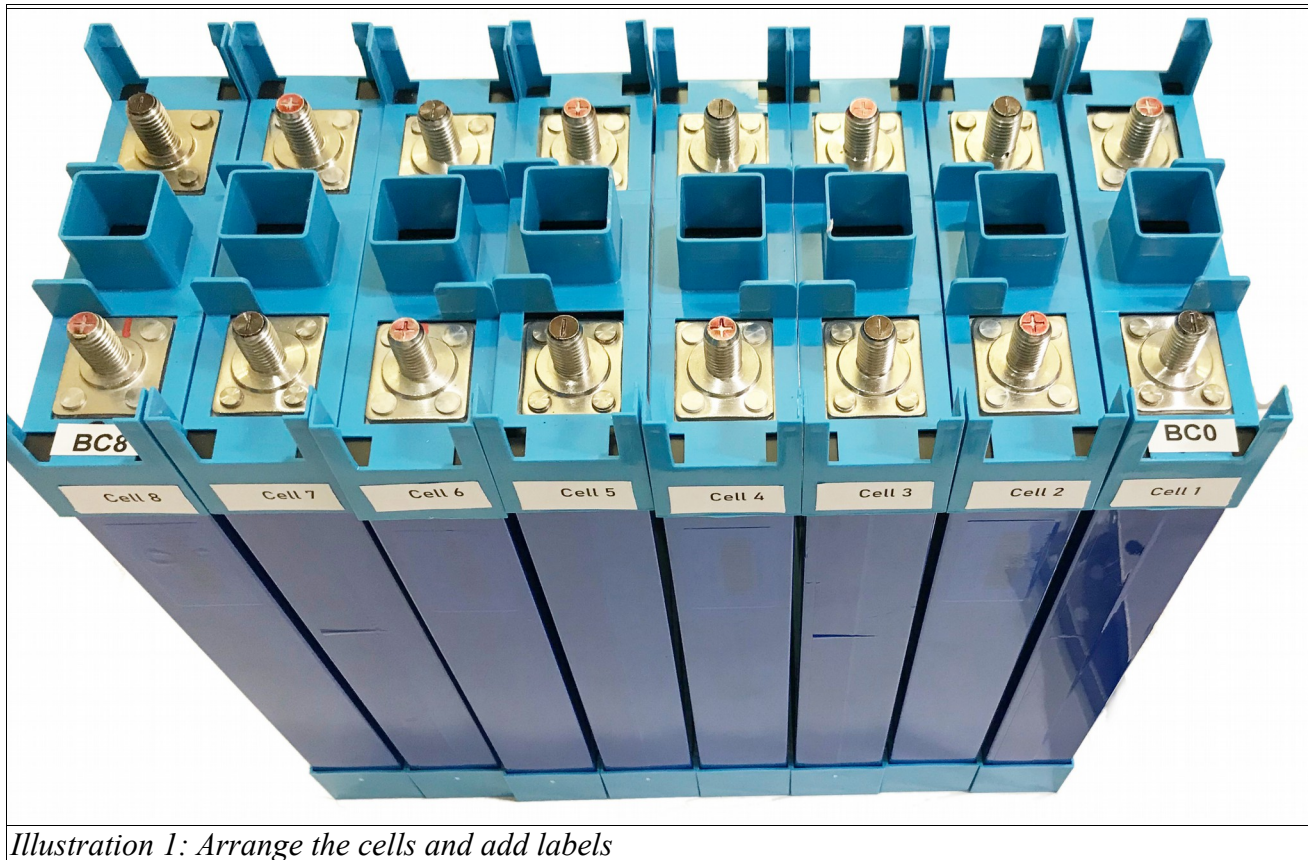


Illustration 1: Arrange the cells and add labels

At this time you can mount the cells together. There are many ways to do this. The simplest option is to tape the cells together. Double sided foam tape between the cell caps is also a good choice. Some builders use wooden or plastic boxes. For this build these cells will be mounted in a stainless steel frame, also available from Overkill Solar. (Instructions for the frame provided separately).



Step 2: Add bus bars.

Place the bus bars as shown.
I have labeled each bus bar BC1 to BC7.

WARNING: This step is critical! Placing a bus bar in the wrong position will cause a short circuit between 2 cells.

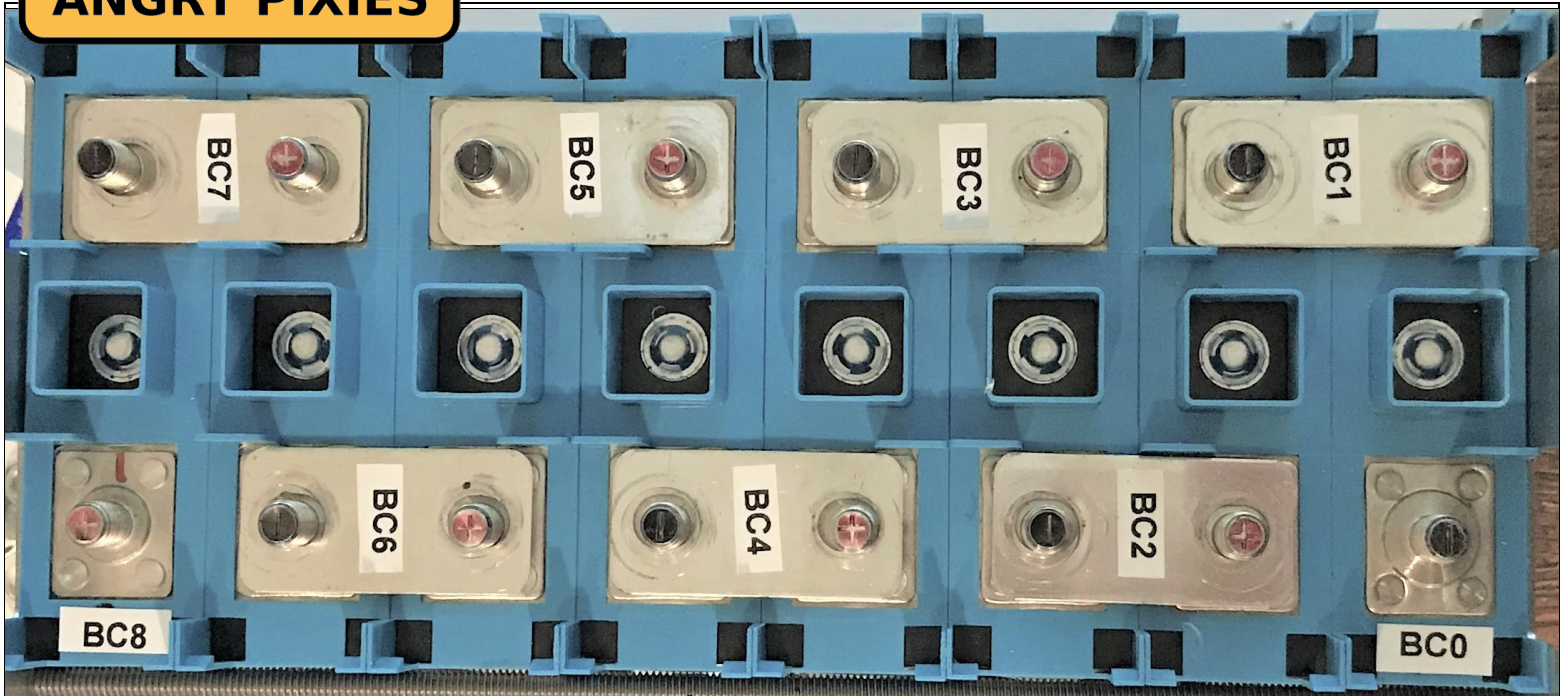


Illustration 2: Add bus bars

Step 3: Connect the balance wires.

The balance wire harness should be unplugged from your BMS for now.

Start with the black balance wire on BC0.

Next, find the first white wire, adjacent to the black wire on the connector. This is BC1.

The next white wire is BC2, and so on.

Lastly, the red wire goes on BC8.

Spin the nuts on as you go.

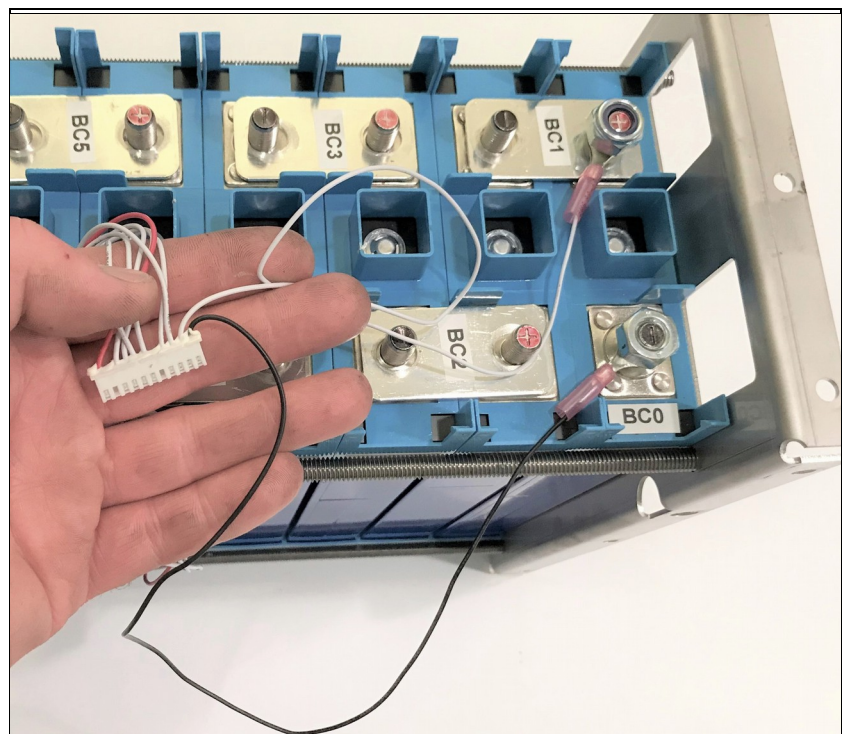


Illustration 3: Balance wires BC0 and BC1 connected

Step 4: Tighten Nuts.

With all 9 balance wires connected, tighten all the nuts.

Suggested torque is 20 ft-lbs or "Nice and snug"

Warning: Do not pinch the balance wires under a nut!

Instant smoke!



Illustration 4: All 9 balance wires connected

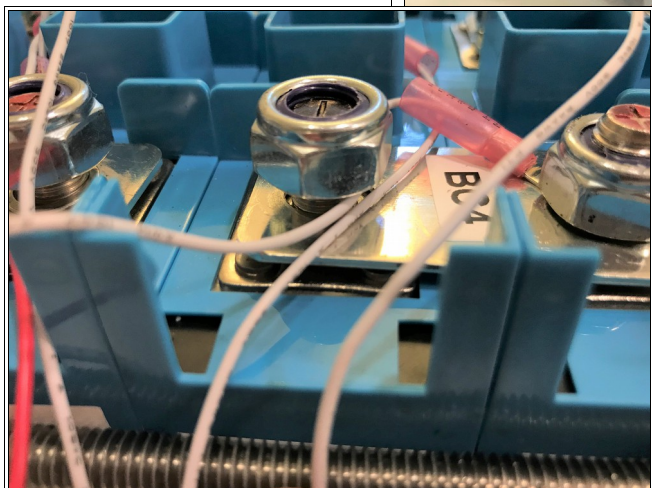
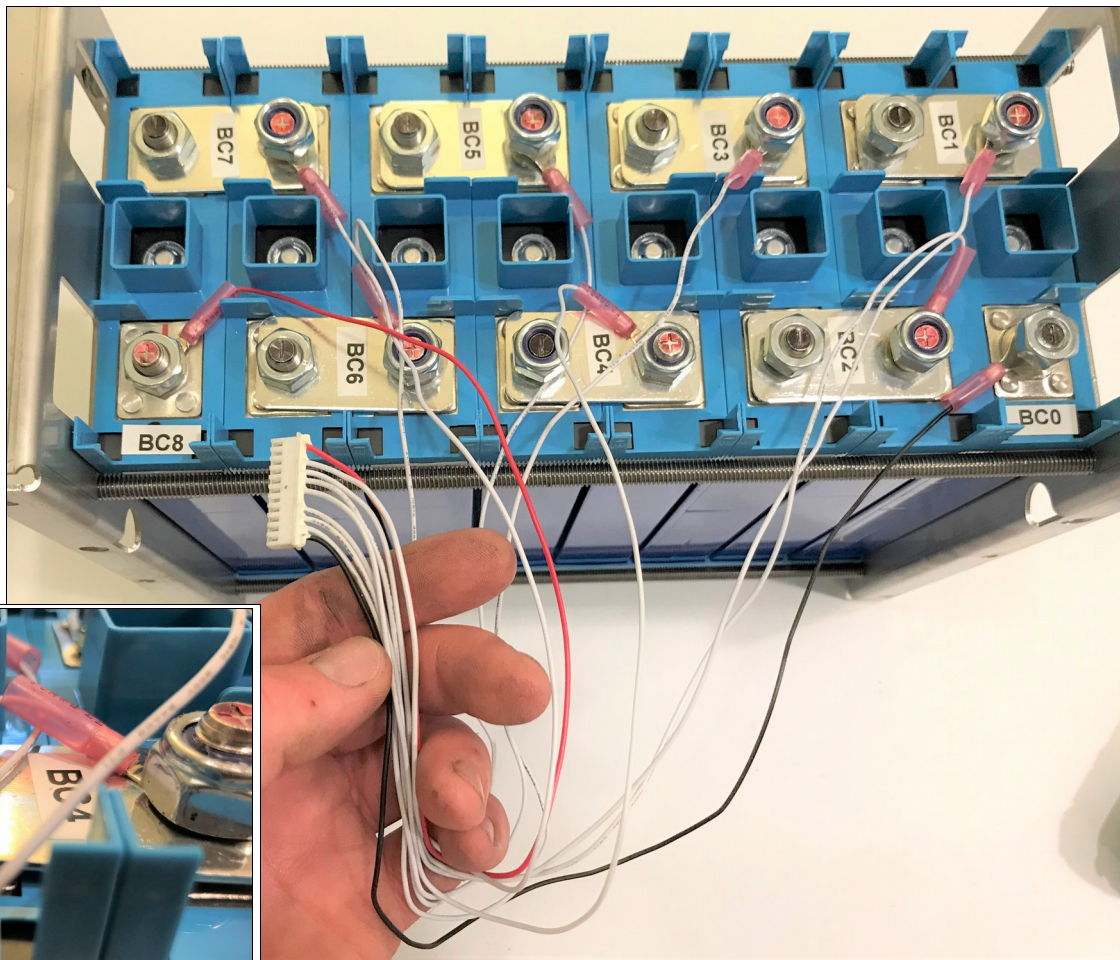


Illustration 5: Don't Pinch!

Step 5: add BMS.

Mount the BMS to the pack. In this build it's attached to the side with foam tape and a large zip tie.

Connect all of the B- wires to the BC0 terminal, and torque the BC0 nut.

Now plug in the balance connector to the BMS.

If all is well the battery pack is now active. All loads and chargers should be connected to BC8 (battery positive) and C- (BMS negative output).

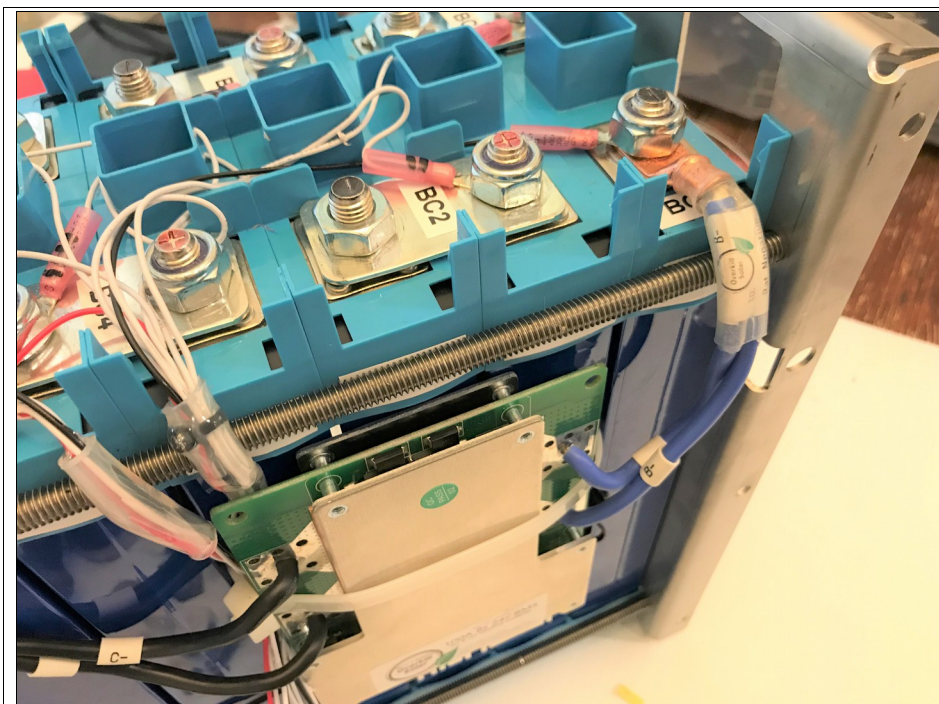


Illustration 6: The B- wires from the BMS are connected to terminal BC0

Step 6: Finish.

Route all the wires as needed and install the caps on the cells.

Insert the temperature probes into the space between the cells and secure.

The Bluetooth module (optional) can also be tucked up under the cell caps.

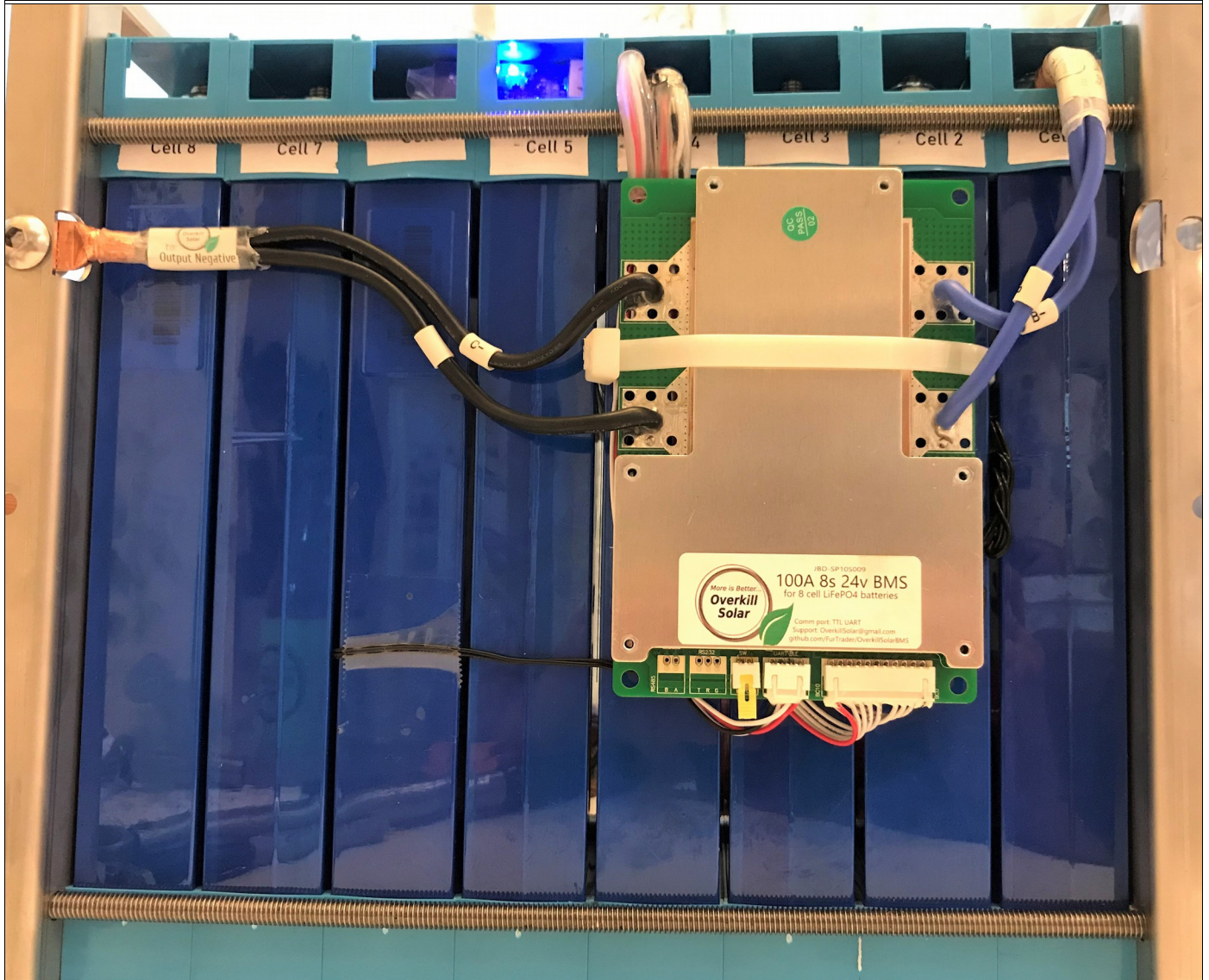


Illustration 7: Route wires and finish assembly

This is now a complete ready to use battery.

The positive battery terminal is BC8, the negative battery terminal is the C- BMS wires.

In this case C- is bolted to the frame for a negative chassis ground system (like most vehicles).

Email OverkillSolar@gmail.com with any questions and check OverkillSolar.com for updates.

-Steve, Overkill Solar.